Determines the number of pancreas beta cells with IHC (*Immunohitochemistry*) method using image processing and calculating method of matlab

Yospina Reru, Jodelin Muninggar, Suryasatrya Trihandaru.

Departement of Physics, Satya Wacana Christian University, Salatiga 50711, Indonesia

Email : yospinareru@gmail.com

Abstract

Cell nucleus is located in the cytoplasm. The cell nucleus of pancreatic beta cells located in the islets of Langerhans. The pancreas consists of exocrine and endocrine glands. Endocrine function produces a rich part of the insulin, glucagon, and pancreatic polypeptide. Insulin is a hormone that work to increase cellular energy reserve which will affect the working system of the pancreas. Through the image of the IHC method (Immunohystochemistry), can determine the amount of the cell nucleus in the cytoplasm. The purpose of this project is to determine the number of pancreatic beta cell nucleus contained in the cytoplasm using matlab. The calculation method of the cell nucleus consists of 4 parts : determine color boxplot and operating boxplot RGB color to black and white, imfill and noise reduction of image and the last step is labeling and counting cell. Result of calculating the number of cell nucleus manually is 73, while the calculation using matlab is 64 cell nucleus. It shows the results of less than 10%, which means that this method could be used in determining the amount of the cell nucleus with some improvement. However calculation using this method still has the blind spot that each cell nucleus that is very close to the nucleus of cells that would otherwise be counted as one nucleus, the cell nucleus which is close to the boundary would not be counted, and this calculation is also affected by noise in the picture.

Keywords : ***Cell nucleus, Cytoplasm, Pancreas, IHC, Matlab.***